Technical IGES Transfer

Using:

Texas Instruments' Data

MIL-D-28000A (IGES)

Quick Short Test Report

28 July 1993

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Quick Short Test Report

28 July 1993

Prepared By
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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1804A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilites and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standars, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Texas Instruments' interpretation and use of the CALS standards in transferring technical IGES data. Texas Instruments used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on two 3.5" disketts. The test was not to evaluate the CALS MIL-STD-1840A per agreement between the AFCTB and Texas Instruments.

2. Test Parameters

Test Plan: AFCTB 93-074

**Date of
Evaluation:**   28 July 1993

Evaluator: George Elwood
                                        Air Force CALS Test Bed
                                        Det 2 HQ ESC/AV-2P
                                        4027 Colonel Glenn Hwy
                                        Suite 300
                                        Dayton OH   45431-1672

**Data
Originator:**   Michael Hurn
                                        Texas Instruments
                                        MS 8420
                                        6500 Chase Oaks Blvd
                                        PO Box 869305
                                        Plano TX   75086

**Data
Description:**   Technical IGES Test
                                                2 Initial Graphics Exchange Specification
                                                        (IGES) files

**Data
Source System:**

                     IGES
                                HARDWARE
                                        SUN 4/60
                                SOFTWARE
                                        Pro/Engineer V11
                                        Computervision CADDStation R6.2D IGES V7
                                        ITI IGES/Works V1.4

Evaluation Tools Used:

MIL-D-28000 (IGES)

  Sun SparcStation 2

    ArobrText *iges2draw*
    Carberry *CADLeaf Plus v3.1*
    IGES Data Analysis (IDA) *Parser/Verifier v93*
    IDA *IGESView v3.05*
    Intergraph *I/EMS 02.00.01.11*
    Intergraph *I/CIGES 02.00.01.03*
    International TechneGroup Incorporated
      (ITI) *IGES/Works v1.3*

  PC 486/50

    AUTODESK *AutoCAD 386 R12*
    AUTODESK Micro Engineering Solutions
      (MES) *CheckMark v1.0*
    Cadkey *Cadkey v5.02*

**Standards
Tested:**

  MIL-D-28000A

3. 1840A Analysis

3.1 External Packaging

The two 3.5" diskettes arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a commercial overnight envelop. The exterior of the envelop was not marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The 3.5" diskettes were not enclosed in a barrier bag or barrier sheet material, as required by MIL-STD-1840A, para. 5.3.1.2. Enclosed in the envelop was a packing list showing all files recorded on the diskettes.

3.2 Transmission Envelope

The diskettes received by the AFCTB contained MIL-STD-1840A files. The files were not named per the standard conventions per agreement between the AFCTB and Texas Instruments.

3.2.1 Tape Formats

Not Evaluated.

3.2.2 Declaration and Header Fields

Not evaluated

4. IGES Analysis

Both diskettes contained one IGES file each. These files were evaluated using IDA's *parser/verifier* set for CALS Class II. This utility did not report any CALS Class II errors on either diskette. However, the second file had 17 IGES errors and one severe IGES error. The parser log can be found in Appendix A of this report. The required CALS information in the Start section was present.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The file on the first diskette was converted using Ar-obrText's *iges2draw* utility with no reported errors. The resulting file was read into Island Graphics' *IslandDraw*, displayed and printed without a reported error. Some minor problems were noted in text overflow. The file on the second diskette converted without a reported error. However, the resulting file was not usable by Island Graphics' *IslandDraw*. The file size was only 12K from an input size of 5.7M.

The files were read using AUTODESK's *AutoCAD R12* with translator version 5.1. Both files converted and displayed like the provided hard copies. Some minor text overflow occurred in the first file.

The files were read into MES' *CheckMark*. Both files converted and displayed. File one displayed and printed like the provided copy. Some minor text overflow was noted in the area near the bottom right corner. File two initially displayed like the provided copy. When the file was enlarged, to fit the screen, the 3-D missile drawing was displayed. An Attempt to print this screen display was not successful due to memory limitation in the laser printer.

The files were converted using Cadkey's *ig2c* utility. The resulting files were read into Cadkey's *Cadkey*, displayed and printed. File one had no problems except for some text overflow in the lower right corner. File two would not convert, and error messages were displayed on the screen

during the conversion processes. The reported error was an out of memory error on entity 315.

The files were read into Carberry's *CADLeaf* software. Both files converted and displayed without an error. The displayed images appeared to be the same as provided by Texas Instruments.

The files were read using IDA's *IGESView*. Both files were displayed on the screen and were printed. The resulting outputs were the same as provided by Texas Instruments.

The IGES files were converted using Intergraph's *I/CIGES* utility without a reported error. The resulting files were read into Intergraph's *I/EMS* and displayed. The image for file one was the same as the provided file. The image for file two consisted of random lines, nothing of value displayed. Some parts of the displayed image could be identified in the ITI's *IGESWorks* output.

The files were read using ITI's *IGESWorks* without a reported error. The files were displayed and printed. File one was printed the same as the hard copy provided by Texas Instruments except for some minor text overflow noted in the lower right corner. File two was displayed as a 3-D model. It appeared that a complete missile system was included in the file. See the hard copy.

Both files had no reported CALS Class II errors. File one was converted on all systems available in the AFCTB without a problem. The resulting images matched those provided by Texas Instruments. File two could only be read by four software applications. One system displayed additional information not displayed on the Texas Instrument provided copy. File two, because of basic IGES errors, does not meet the CALS MIL-D-28000A specification.

5. SGML Analysis

The 3.5" diskettes contained no Standard Generalized Markup Language (SGML) files.

6. Raster Analysis

The 3.5" diskettes contained no Raster files.

7. CGM Analysis

The 3.5" diskettes contained no Computer Graphics Metafile (CGM) files.

8. Conclusions and Recommendations

The two 3.5" diskettes provided by Texas Instruments were not evaluated for MIL-STD-1840A requirements per agreement between the AFCTB and TI.

The two 3.5" diskettes contained one IGES file each. File one meets the CALS MIL-D-28000A Class II sub set specification, and could be used by all systems available in the AFCTB.

File two had reported basic IGES errors. The file could only be read by two of the systems available in the AFCTB. It does not meet the CALS MIL-D-28000A Class II sub set specification.

9. Appendix A - Detailed IGES Analysis

9.1 File One

9.1.1 Parser/Verifier Log

```
**********************************
*****   IGES PARSER/VERIFIER   *****
*****         MARCH 1993        *****
*****   IGES Data Analysis     *****
*****      (708) 344-1815       *****
**********************************

Input file is /home/aftb4/gelwood/ti001.igs

Checking conformance to CALS Class II (MIL-D-28000A 2/10/92)

Today is July 27, 1993  2:19 PM


**********************************
*****    CHECK FILE SYNTAX    *****
**********************************

    Section        Records

    Start            21
    Global            4
    Directory      2820  (   1410 Entities)
    Parameter      2087
    Terminate         1

    No syntax errors detected.


**********************************
*****  SUMMARY AND STATISTICS  ****
**********************************

*** File and Product Name Information ***

    File name from sender     = '3131690_drw_rel11.igs'
    File creation Date.Time    = '930721.110853'
    Model change Date.Time     = ''
    Author                     = 'bruce'
    Department                 = '<UNKNOWN>'
    Product name from sender = '3131690'
    Destination product name = '3131690'
```

*** Parameter Delimiters ***

    Delimiter = ','
    Terminator = ';'

 *** Originating System Data ***

    System ID   = 'Pro/ENGINEER by Parametric Technology
    Corporation'
    Preprocessor version   = 'D-02-30'
    Specification version = 9 (IGES 5.1)
ERROR   4048: Illegal specification version for CALS Class II specified.

 *** Precision levels ***
    Integer bits =   32
    Floating point   - Exponent =   38 Mantissa =   6
    Double precision - Exponent =   308 Mantissa =   15

 *** Global Model Data ***

    Model scale   = 1.0000E+00
    Unit flag   = 1
    Units   = 'INCH'
    Line weights   = 32768
    Maximum line thickness = 5.000000E-01
    Minimum line thickness = 1.525879E-05
    Granularity   = 6.962036E-06
    Maximum coordinate   = 2.784926E-01

    Drafting standard applicable to original data is not specified.

 *** Status Flag Summary ***

  Blank status: Visible   1410
                Blanked   0

  Independence: Independent   1164
                Physically Subordinate   245
                Logically Subordinate   1
                Totally Subordinate   0

  Entity use: Geometry   911
                Annotation   499
                Definition   0
                Other   0
                Logical/Positional   0
                2D parametric   0
                Construction geometry   0

		Not Specified	0
Hierarchy:	Structure DE applies	1410
	Subordinate DE applies	0
	Hierarchy property applies	0
	Not Specified	0

*** Entity Occurrence Counts ***

Entity	Form	Level	Count	Type
100	0	0	84	Circular arc
100	0	13	1	
106	11	0	10	Copious data - Piecewise planar, linear string(2D linear path)
106	20	0	52	Centerline
106	40	0	22	Witness line
106	40	10	54	
106	40	16	2	
106	63	0	11	Simple closed planar curve
110	0	0	782	Line
110	0	13	3	
110	0	15	21	
206	0	10	2	Diameter dimension
210	0	12	5	General label
212	0	0	152	General note
212	0	10	36	
212	0	12	8	
212	0	13	2	
212	0	15	3	
212	0	16	2	
214	3	0	22	Leader arrow - Filled triangle
214	3	10	63	
214	3	12	5	
214	3	16	3	
216	0	0	11	Linear dimension
216	0	10	27	
216	0	16	1	
222	0	10	7	Radius dimension
222	0	16	1	
228	0	13	2	General symbol
230	0	0	11	Sectioned area (Standard Crosshatching)
404	0	1	1	Drawing
406	15	1	1	Property - Name
406	16	1	1	Property - Drawing size
406	17	1	1	Property - Drawing units
410	0	1	1	View - Orthographic parallel

*** Entity Count by Level ***

Level	Count
0	1157
1	5
10	189
12	18
13	8
15	24
16	9

*** Labeling Information ***

0% of the entities are labeled.

Unlabeled   1410

*** Line Fonts Used in Data ***

100	102	104	106	108	110	112	114	
-	-	-	-	-	-	-	-	Undefined
61	-	-	92	-	697	-	-	Solid
24	-	-	7	-	105	-	-	Dashed
-	-	-	-	-	4	-	-	Phantom
-	-	-	52	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Line Widths Used in Data ***

Weight	Count	Width
Defaulted	1410	(0.0000)

*** Colors Used in Data ***

Defaulted	5
Red	20
Yellow	1066
White	319

****
*****   ENTITY ANALYSIS   *****
****

*** Entity type: 100

*** Entity type: 106

*** Entity type: 110

-- 806 lines averaging 8.663324E-01 units --

*** Entity type: 206

*** Entity type: 210

*** Entity type: 212

     302 text strings in data file.
     Average text aspect ratio in file is 1.0096210.
     Minimum text aspect ratio in file is 0.7500000.
     Maximum text aspect ratio in file is 2.4166687.

     FONTS USED IN FILE

     FONT   COUNT   NAME

       1   274   Default ASCII Style
    1003   28   Drafting Font

*** Entity type: 214

     Average arrow aspect ratio in file is 3.0000000.
     Minimum arrow aspect ratio in file is 3.0000000.
     Maximum arrow aspect ratio in file is 3.0000000.

*** Entity type: 216

*** Entity type: 222

*** Entity type: 228

WARNING 2323: No geometry referenced by general symbol at D   55.

*** Entity type: 230

*** Entity type: 404

Drawing at D   1 contains 1 views.
Drawing at D   1 contains 0 annotation entities.

*** Entity type: 406

*** Entity type: 410

Scale of view at D   9 is 1.000000E+00.
Orthographic View entity at D   9 has 0 clipping planes specified.
   XMIN = Not Set   XMAX = Not Set
   YMIN = Not Set   YMAX = Not Set
   ZMIN = Not Set   ZMAX = Not Set

 *** Message Summary ***

2009: 1 Illegal defaults.
4011: 1 Problems in the Global section

 *** Error Summary ***

     0 fatal errors
     0 severe errors
     1 errors
     1 warnings
     0 cautions
     0 nitpicks
     0 notes

 *** End of Analysis of /home/aftb4/gelwood/ti001.igs ***

9.1.2 Parser Log - AutoCAD R12

Title: IGESIN Journal (v5.1 Nov 05 1992)
===

File: C:/TMP/TI001.xli
Date: Wed, Jul 28, 1993
Time: 10:29:03
===

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750
Translating from IGES file: C:/TMP/TI001.IGS
           to AutoCAD Drawing: C:\TMP\TI001.dwg

===

Options obtained from: default settings
Curves Approximated to Tolerance of   0.01
Surfaces Approximated to Tolerance of   0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin
3	PHANTOM	acad.lin

4	CENTER	acad.lin
5	DOT	acad.lin

==

Parse phase

*** Warning (IEVM_FIRST_NOT_COLINEAR_106) ***
(DE 117, TF 106:40) Entity's points are not directionally colinear. All
vectors formed by consecutive points must be in the same direction.

Action taken: First point moved to a valid location.

*** Warning (IEVM_FIRST_NOT_COLINEAR_106) ***
(DE 345, TF 106:40) Entity's points are not directionally colinear. All
vectors formed by consecutive points must be in the same direction.

Action taken: First point moved to a valid location.

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Warning (IEVM_NUM_POINTS_LOW_106) ***
(DE 1983, TF 106:20) Entity has too few data points. Number of data points
found was 2. Number of data points must be at least 3.

*** Warning (IEVM_NUM_POINTS_LOW_106) ***
(DE 1987, TF 106:20) Entity has too few data points. Number of data points
found was 2. Number of data points must be at least 3.

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Warning (IEVM_NUM_POINTS_LOW_106) ***
(DE 2071, TF 106:20) Entity has too few data points. Number of data points
found was 2. Number of data points must be at least 3.

==

Start Section:

CONFORMANCE: This IGES file conforms to the MIL-D-28000A Class II
             subset (Engineering Drawings) dated December 19, 1990.

DOD-STD-100 and MIL-T-31000 part and drawing identification:

Revision letters:

Performing organization:

Date of the ASME Y14.26M file pre-processing:

Contract Number:

Intended drawing size letter:

Number of drawing sheets in the file:

Data organization method with contents of each level:

IGES/Works Version v1.4.0 Subset Generator
 PTC IGES file: 3131690_drw_rel11.igs

Global Section:

Parameter Delimiter:	,
Record Delimiter:	;
Sending Product ID:	3131690
File Name:	3131690_drw_rel11.igs
System ID:	Pro/ENGINEER by Parametric Technology Corporation
Preprocessor Version:	D-02-30
Size of Integer:	32
Sgl. Precision Mag:	38
Sgl. Precision Sig:	6
Dbl. Precision Mag:	308
Dbl. Precision Sig:	15
Receiving Product ID:	3131690
Model Space Scale:	1.000000
Unit Flag:	1
Unit String:	INCH
# of Line Weights:	32768
Maximum Line Width:	0.500000
Creation Date:	07/21/93 11:08:53
Minimum Resolution:	0.000007
Maximum Coordinate:	0.278493
Author:	bruce
Organization:	<UNKNOWN>
IGES Version Number:	9
Drafting Standard:	0
Model Create/Modify Date:	Not Specified

Entity Summary:

Type	Form	Description	Count
100	0	Circular Arc	85
106	11	Planar Piecewise Linear Curve	10
106	20	Centerline Through Points	52
106	40	Witness Line	78
106	63	Simple Closed Planar Curve	11

110	0	Line	806
206	0	Diameter Dimension	2
210	0	General Label	5
212	0	General Note (Simple)	203
214	3	Leader (Filled triangle)	93
216	0	Linear dim - undetermined form	39
222	0	Radius Dimension (Single Leader)	8
228	0	General Symbol	2
230	0	Section Area (Standard Fill)	11
404	0	Drawing (form 0)	1
406	15	Property (Name)	1
406	16	Property (Drawing Size)	1
406	17	Property (Drawing Units)	1
410	0	View	1

Total   1410

Translation phase

*** Error (ACAD_APPROXCURVEERROR) ***
Internal error 2302 approximating curve at DE: 11, TYPE: 230, FORM: 0

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Warning (ACAD_I2AMAKESTYLEERROR) ***
Error creating text style. Most likely could not open the
shape file for a font. Text will be forced to STANDARD.
The style attempted was named: SYMBOL3

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

Drawing Entity (404 Form 0) at DE 1, with
   name = 3131690,
   size = 34.000000, 22.000000,
   units = INCH,
was processed in the AutoCAD drawing file: C:\TMP\TI001.dwg

*** Warning (ACAD_NEW_VIEW_VOLUME_GENERATED) ***
(DE: 9 TF: 410:0)
A new view volume has been generated for the view with:
 XMIN (-4.050000), XMAX (38.050000),
 YMIN (-4.050000), YMAX (26.050000),
 ZMIN (-4.050000), ZMAX (4.550000).

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
100	0	Circular Arc	85	85	0
106	11	Planar Piecewise Linear Curve	10	10	0
106	20	Centerline Through Points	52	0	52
106	40	Witness Line	78	78	0
106	63	Simple Closed Planar Curve	18	18	0
110	0	Line	806	806	0
206	0	Diameter Dimension	2	2	0
210	0	General Label	5	5	0
212	0	General Note (Simple)	203	203	0
214	3	Leader (Filled triangle)	93	93	0
216	0	Linear dim - undetermined form	39	39	0
222	0	Radius Dimension (Single Leader)	8	8	0
228	0	General Symbol	2	2	0
230	0	Section Area (Standard Fill)	11	11	0
404	0	Drawing (form 0)	1	1	0
406	15	Property (Name)	1	1	0
406	16	Property (Drawing Size)	1	1	0
406	17	Property (Drawing Units)	1	1	0
410	0	View	1	1	0
Totals			1417	1365	52

AutoCAD Entity Summary

Entity	Created	Errors
LINE	816	0
CIRCLE	48	0
TEXT	221	0
ARC	37	0
SOLID	9	0
INSERT	24	0
POLYLINE	17	0
DIMENSION	49	0
BLOCK	24	0
Totals	1245	0

Error Summary:

The following message was issued 52 time(s)

Entity has too few data points. Number of data points found was %d. Number of
data points must be at least %d.

The following message was issued 4 time(s)
Entity's points are not directionally colinear. All vectors formed by
consecutive points must be in the same direction.

The following message was issued 7 time(s)
Internal error %d approximating curve at DE: %d, TYPE: %d, FORM: %d

The following message was issued 1 time(s)
A new view volume has been generated for the view with:
 XMIN (%lf), XMAX (%lf),
 YMIN (%lf), YMAX (%lf),
 ZMIN (%lf), ZMAX (%lf).
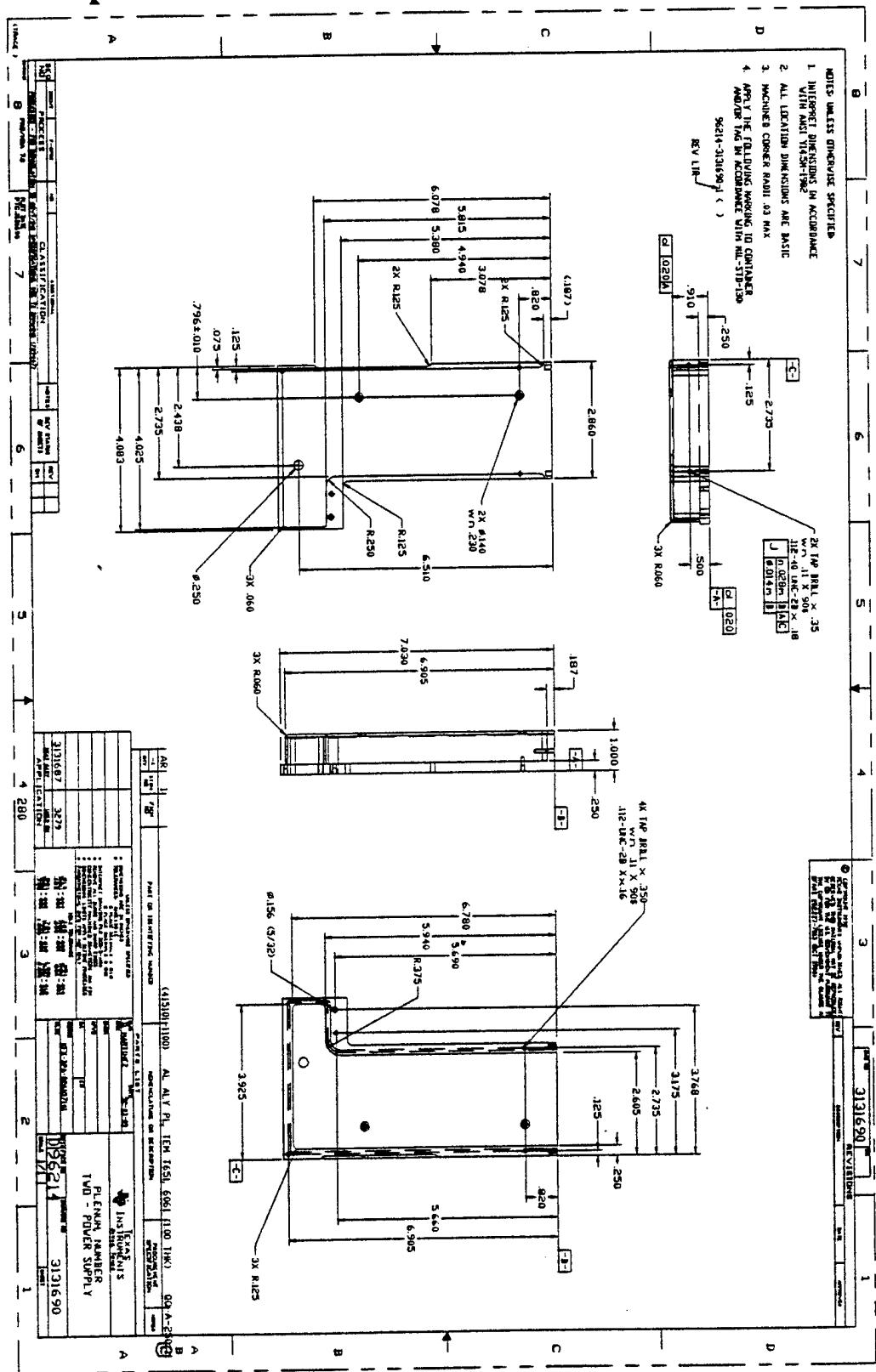
The following message was issued 19 time(s)
Error creating text style. Most likely could not open the
shape file for a font. Text will be forced to STANDARD.
The style attempted was named: %s

Status: 0
Warning: 76
Error: 7
Fatal: 0
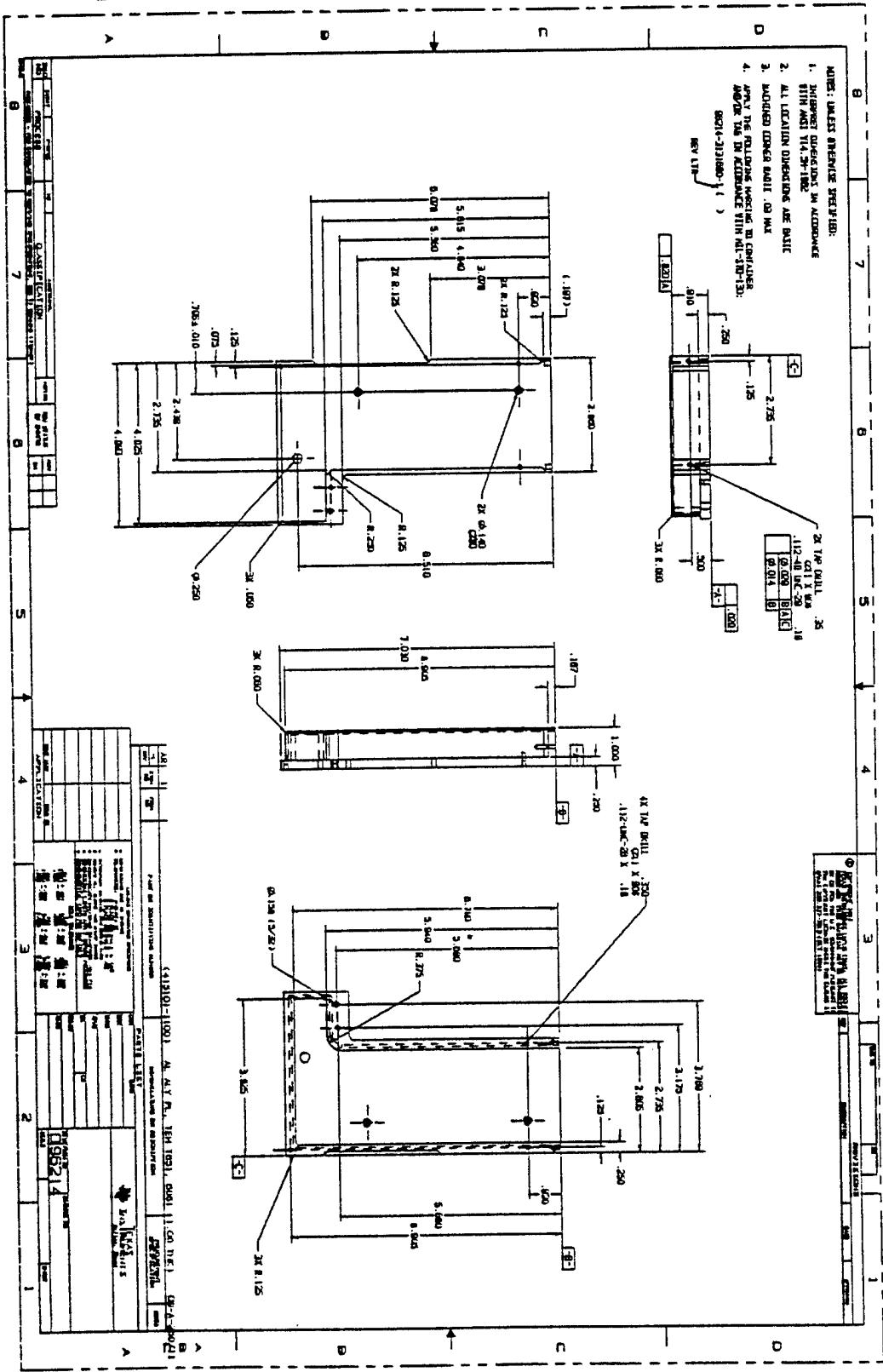
Elapsed Time:

Processor: 00:01:16
Clock: 00:01:17
==
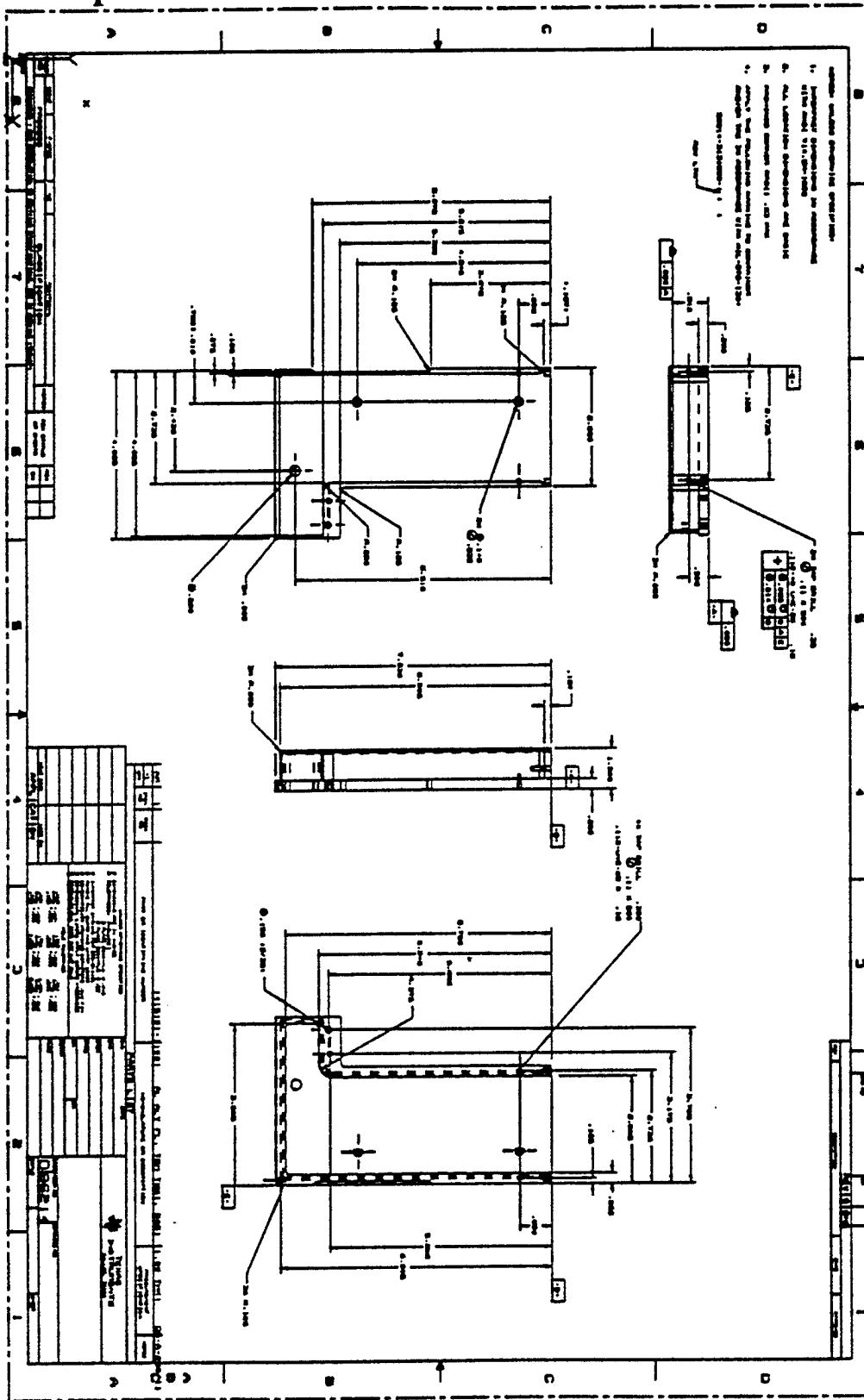
9.1.3 Output AutoCAD R12
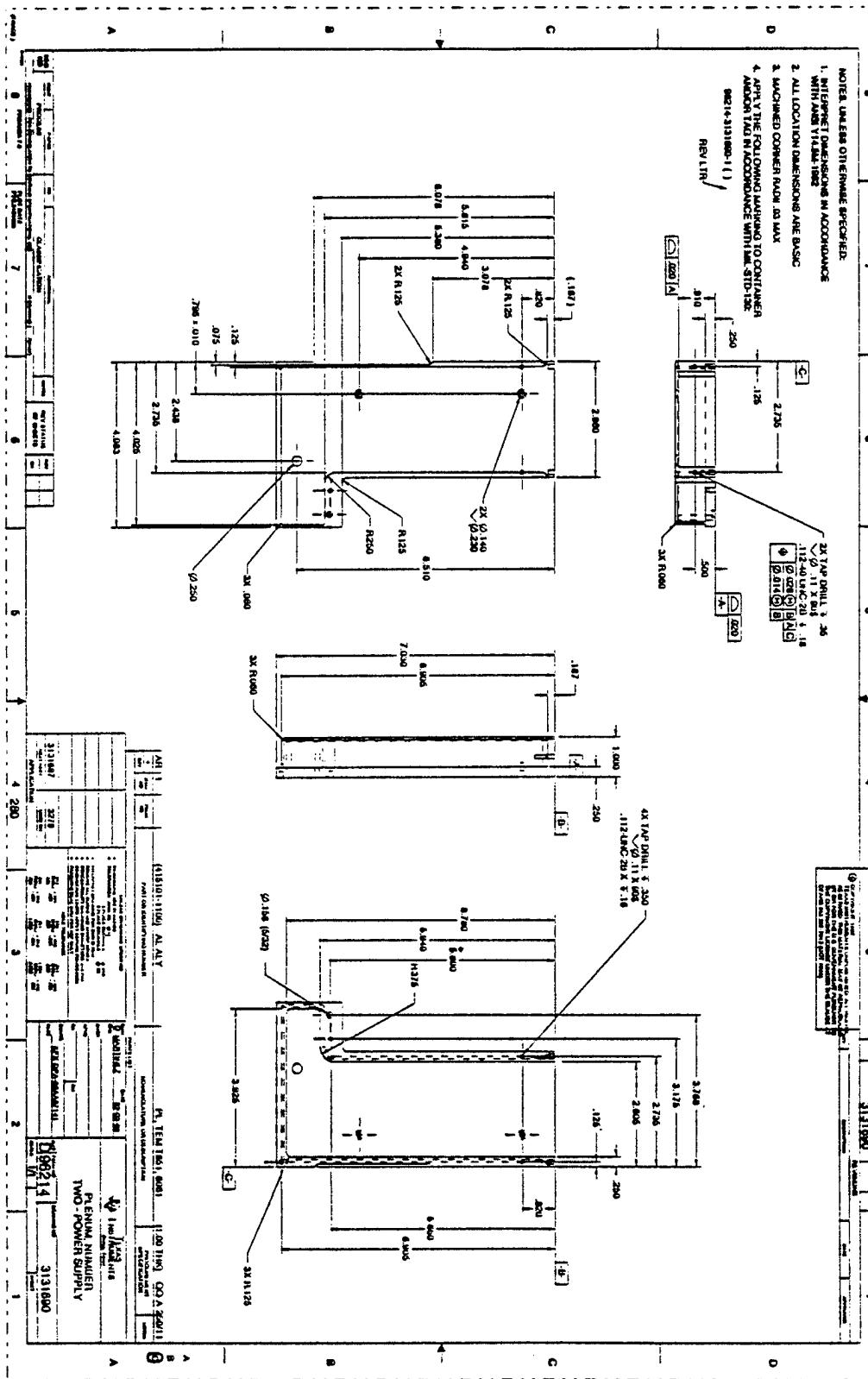
9.1.4 Output Cadkey v5.02
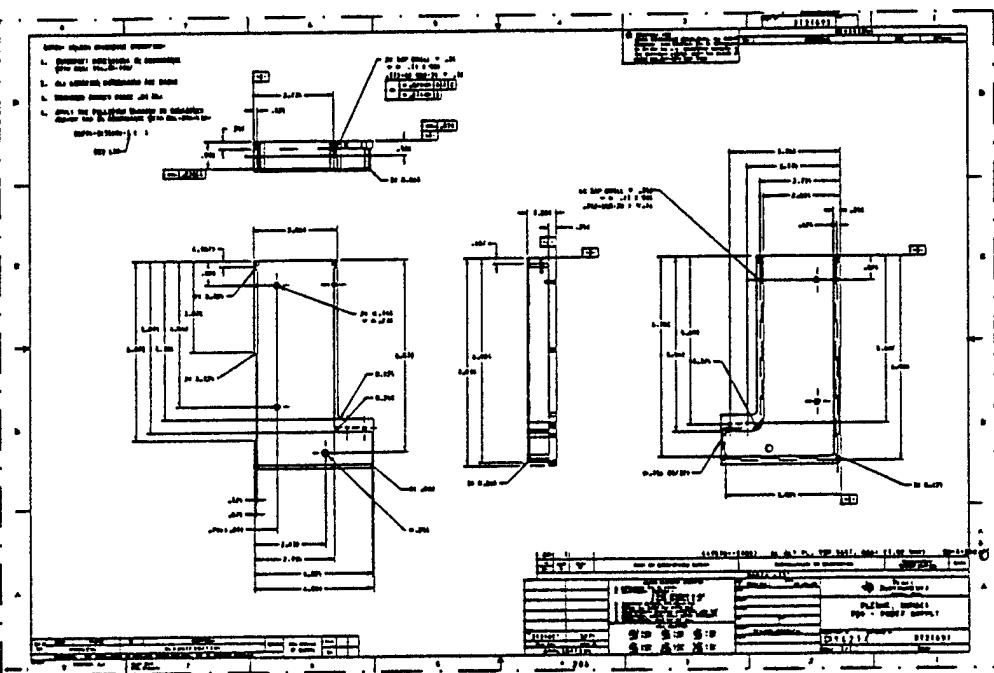
9.1.5 Output CheckMark v1.0
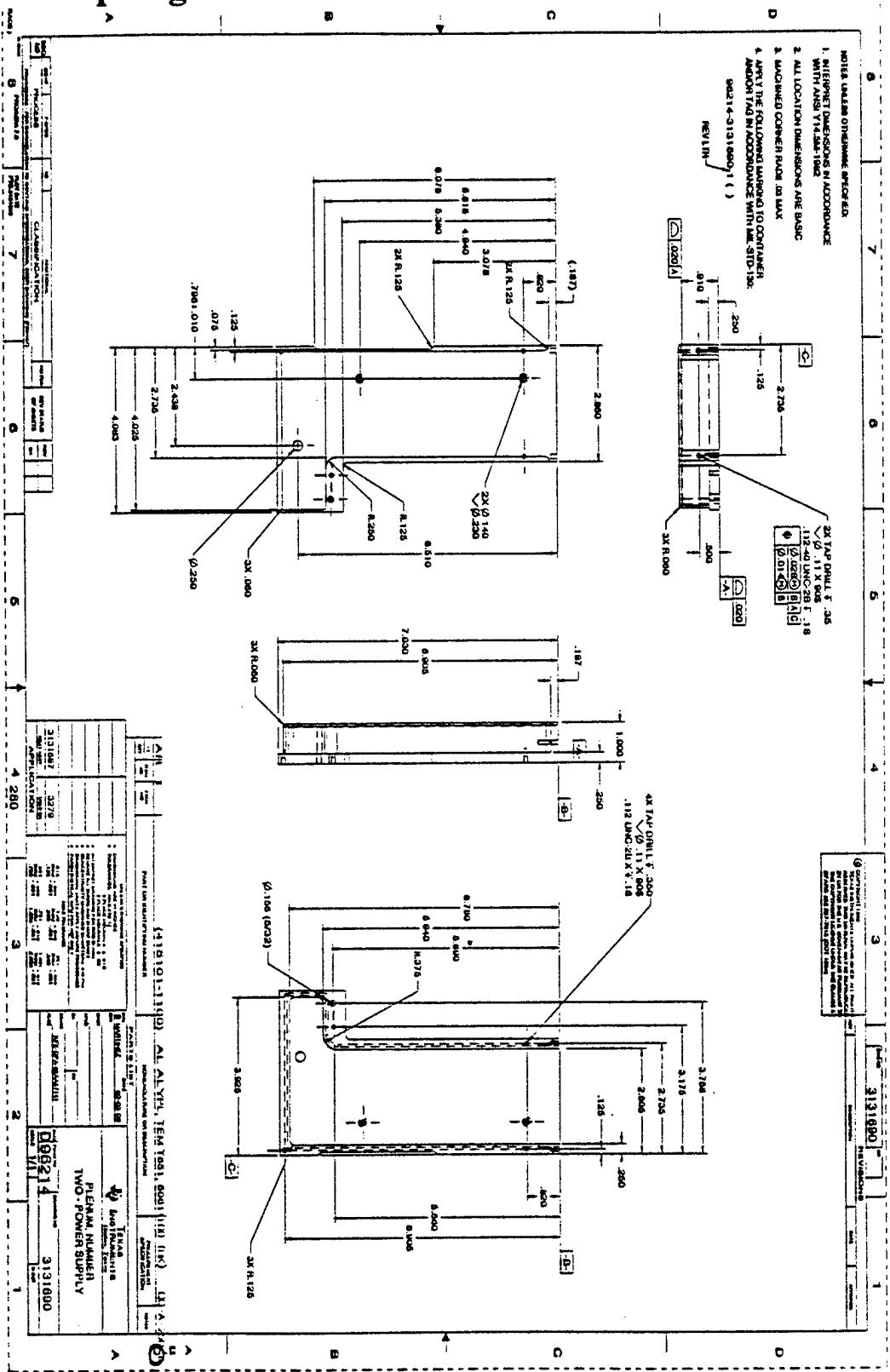
9.1.6 Output IGESView
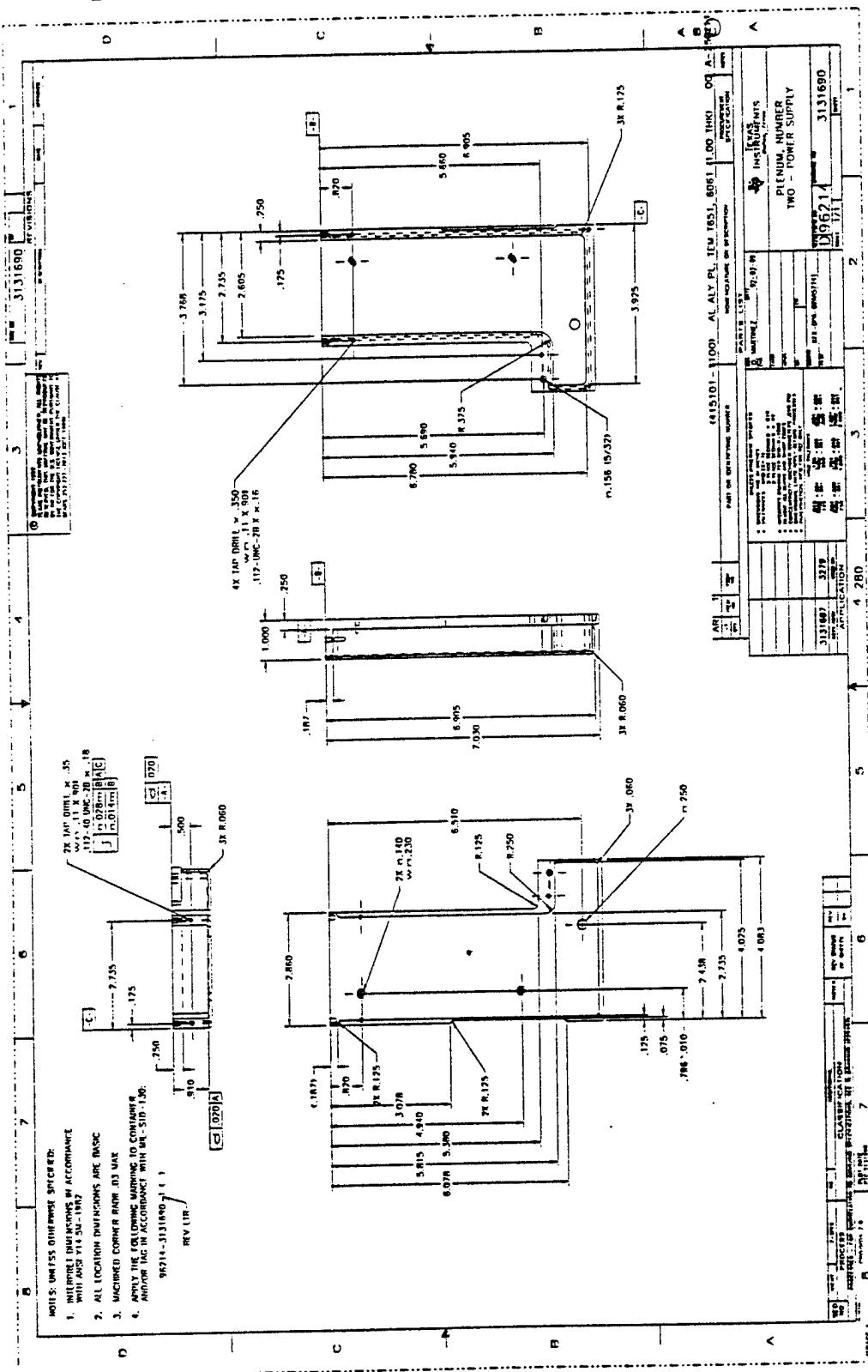
9.1.7 Output IGESWorks

9.1.8   Output iges2draw/IslandDraw

9.1.9 Output Preview

9.2 File Two

9.2.1 Parser/Verifier Log

```
**********************************
*****   IGES PARSER/VERIFIER   *****
*****         MARCH 1993       *****
*****   IGES Data Analysis     *****
*****       (708) 344-1815     *****
**********************************

Input file is /home/aftb4/gelwood/ti002.igs

Checking conformance to CALS Class II  (MIL-D-28000A 2/10/92)

Today is July 27, 1993   2:20 PM

**********************************
*****     CHECK FILE SYNTAX    *****
**********************************


    Section          Records

    Start              21
    Global              4
    Directory         21038   (  10519 Entities)
    Parameter         50092
    Terminate           1


    No syntax errors detected.


**********************************
*****   SUMMARY AND STATISTICS  ****
**********************************

*** File and Product Name Information ***

    File name from sender    = 'iges.j3181as11034sh1'
    File creation Date.Time   = '930721.093108'
    Model change Date.Time    = '691231.180003'
SEVERE  2072: Macro Entity type number (768144) is out of defined range at D
               771768.
    Author                   = '<UNKNOWN>'
    Department               = '<UNKNOWN>'
    Product name from sender = 'scr.iges42110341'
    Destination product name = 'scr.iges42110341'
```

*** Parameter Delimiters ***

   Delimiter = ','
   Terminator = ';'

*** Originating System Data ***

   System ID   = 'COMPUTERVISION CADDStation REV 6.2D GRAPHIC
   SYSTEM'
   Preprocessor version = 'CADDS-IGES REVISION 7.0 (02-Jan-92)'
   Specification version = 8 (IGES 5.0)
ERROR   4048: Illegal specification version for CALS Class II specified.

*** Precision levels ***
   Integer bits =   32
   Floating point - Exponent =   38 Mantissa =   6
   Double precision - Exponent =   308 Mantissa =   15

*** Global Model Data ***

   Model scale   = 1.0000E+00
   Unit flag   = 1
   Units   = 'IN'
   Line weights   = 32767
   Maximum line thickness = 3.276700E+01
   Minimum line thickness = 1.000000E-03
   Granularity   = 1.000000E-04
   Maximum coordinate   = 1.610000E+02

   Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

  Blank status: Visible   10435
              Blanked   84

  Independence: Independent   9956
              Physically Subordinate   85
              Logically Subordinate   458
              Totally Subordinate   4

  Entity use: Geometry   9952
            Annotation   12
            Definition   24
            Other   547
            Logical/Positional   0
            2D parametric   0
            Construction geometry   0
            Not Specified   0

Hierarchy: Structure DE applies   1
              Subordinate DE applies   10518
              Hierarchy property applies   0
              Not Specified   0

*** Entity Occurrence Counts ***

Entity	Form	Level	Count	Type
100	0	0	3	Circular arc
100	0	1	64	
100	0	2	225	
100	0	3	136	
100	0	5	41	
100	0	7	479	
100	0	8	240	
100	0	9	76	
100	0	10	44	
100	0	12	15	
100	0	18	5	
100	0	19	19	
100	0	30	117	
100	0	31	101	
100	0	36	6	
100	0	37	1	
100	0	40	43	
100	0	41	43	
100	0	60	49	
100	0	61	40	
100	0	64	44	
100	0	65	72	
100	0	70	103	
100	0	75	16	
100	0	76	16	
100	0	100	8	
100	0	105	40	
100	0	108	14	
100	0	110	16	
100	0	111	40	
100	0	115	1	
100	0	116	26	
100	0	120	16	
100	0	121	8	
100	0	122	8	
100	0	133	2	
100	0	152	24	
100	0	153	25	

100	0	170	78	
100	0	185	1	
100	0	250	25	
100	0	253	1	
102	0	0	8	Composite curve
104	1	0	4	Conic arc - ellipse
104	1	5	1	
104	1	7	71	
104	1	61	8	
104	1	65	28	
104	1	105	2	
106	12	0	1	Copious data - Piecewise linear string(3D linear path)
106	12	105	1	
106	12	249	1	
110	0	0	38	Line
110	0	1	248	
110	0	2	609	
110	0	3	514	
110	0	5	95	
110	0	7	1125	
110	0	8	400	
110	0	9	85	
110	0	10	88	
110	0	12	17	
110	0	18	13	
110	0	19	58	
110	0	30	154	
110	0	31	165	
110	0	36	44	
110	0	37	8	
110	0	40	83	
110	0	41	83	
110	0	44	10	
110	0	60	59	
110	0	61	101	
110	0	64	52	
110	0	65	246	
110	0	70	192	
110	0	75	42	
110	0	76	42	
110	0	99	1	
110	0	100	26	
110	0	105	73	
110	0	106	2	
110	0	107	2	
110	0	108	46	
110	0	110	30	
110	0	111	46	

110	0	115	12	
110	0	116	56	
110	0	120	19	
110	0	121	29	
110	0	122	8	
110	0	123	9	
110	0	133	5	
110	0	137	3	
110	0	153	581	
110	0	250	193	
110	0	251	28	
110	0	252	68	
110	0	253	22	
116	0	0	34	Point
116	0	1	4	
116	0	2	1	
116	0	3	6	
116	0	6	76	
116	0	7	14	
116	0	31	2	
116	0	44	8	
116	0	76	13	
116	0	100	48	
116	0	105	2	
116	0	120	1	
116	0	121	1	
116	0	249	4	
124	0	0	332	Transformation matrix
126	0	0	36	Rational B-spline curve
126	0	2	332	
126	0	3	312	
126	0	5	1	
126	0	7	133	
126	0	8	60	
126	0	9	144	
126	0	10	12	
126	0	12	16	
126	0	18	71	
126	0	31	16	
126	0	40	49	
126	0	41	49	
126	0	42	6	
126	0	43	6	
126	0	44	10	
126	0	61	4	
126	0	65	34	
126	0	70	36	
126	0	105	1	
126	0	106	5	

126	0	107	5	
126	0	108	6	
126	0	116	11	
126	0	120	27	
126	0	121	14	
126	0	122	26	
126	0	123	8	
126	0	185	4	
126	0	249	16	
128	0	185	4	Rational B-spline surface
212	0	0	46	General note
212	0	250	115	
212	0	253	44	
230	0	250	4	Sectioned area (Standard Crosshatching)
304	2	0	2	Line font definition - repeating pattern
314	0	0	17	Color definition
402	7	0	1	Group without back-pointers instance
404	0	0	1	Drawing
406	15	0	1	Property - Name
406	16	0	1	Property - Drawing size
406	17	0	1	Property - Drawing units

*** Entity Count by Level ***

Level	Count
0	526
1	316
2	1167
3	968
5	138
6	76
7	1822
8	700
9	305
10	144
12	48
18	89
19	77
30	271
31	284
36	50
37	9
40	175
41	175
42	6
43	6
44	28
60	108
61	153

```
        64       96
        65      380
        70      331
        75       58
        76       71
        99        1
       100       82
       105      119
       106        7
       107        7
       108       66
       110       46
       111      86
       115       13
       116       93
       120       63
       121       52
       122       42
       123       17
       133        7
       137        3
       152       24
       153      606
       170       78
       185        9
       249       21
       250      337
       251       28
       252       68
       253       67
```

*** Labeling Information ***

   96% of the entities are labeled.

     Unlabeled   364

       Label   Count

      MIPTR   10155

*** Line Fonts Used in Data ***

100	102	104	106	108	110	112	114	
-	-	-	-	-	-	-	-	Undefined
2231	8	114	3	-	5574	-	-	Solid
4	-	-	-	-	12	-	-	Dashed
-	-	-	-	-	9	-	-	Phantom

-	-	-	-	-	1	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
96	-	-	-	-	234	-	-	User defined

116	118	120	122	124	125	126	128	
-	-	-	-	-	-	-	-	Undefined
214	-	-	-	332	-	1356	4	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	6	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	88	-	User defined

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Line Widths Used in Data ***

Weight	Count	Width
Defaulted	364	(0.0010)
1	10155	(0.0010)

*** Colors Used in Data ***

Defaulted	442
Red	696
Green	991
Blue	96
Yellow	592
Magenta	652
Cyan	1217
White	7
User	5826

```
**********************************
*****    ENTITY ANALYSIS    *****
**********************************
```

*** Entity type: 100

*** Entity type: 102

```
ERROR   2506: Undefined subordinate status (4) specified for D   1501.
ERROR   2506: Undefined subordinate status (4) specified for D   1509.
ERROR   2506: Undefined subordinate status (4) specified for D   1517.
ERROR   2506: Undefined subordinate status (4) specified for D   1525.
```

*** Entity type: 104

_____

  *** Entity type: 106

  *** Entity type: 110

CAUTION 2336: Zero length line at D   981.
ERROR   2506: Undefined subordinate status (6) specified for D   1503.
ERROR   2506: Undefined subordinate status (4) specified for D   1505.
ERROR   2506: Messages regarding undefined subordinate status suppressed.
CAUTION 2336: Zero length line at D   18759.
   -- 5830 lines averaging 1.379388E+00 units --

  *** Entity type: 116

  *** Entity type: 124

332 transformation matrices, 111 non-zero translations.
NOTE   2341: 111 matrices contain translation information.

  *** Entity type: 126

  *** Entity type: 128

  *** Entity type: 212

NITPICK 2076: Entity does not have Annotation flag set at D   447.
NITPICK 2076: Entity does not have Annotation flag set at D   449.
NITPICK 2076: Messages regarding entity use (annotation) suppressed.
        242 text strings in data file.
        Average text aspect ratio in file is 0.8836442.
        Minimum text aspect ratio in file is 0.3250000.
        Maximum text aspect ratio in file is 5.0000000.

        FONTS USED IN FILE

        FONT   COUNT   NAME

           1   224   Default ASCII Style
        1003   18   Drafting Font

  *** Entity type: 230

  *** Entity type: 304

Default line font substitute at D   1613 is Solid.
Default line font substitute at D   1729 is Solid.

  *** Entity type: 314

_____

Color specified at D   5 is named 'WHITE'.
  Default color substitute is white.

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Entity type: 402

*** Entity type: 404

NITPICK 2074: Entity use flag must be 1 for Drawing entity at D   439.
CAUTION 2325: No views in drawing at D   439.
Drawing at D   439 contains 1027 annotation entities.
NITPICK 2067: Entity (D   447) referenced by drawing at D   439 is not
marked as annotation.
NITPICK 2067: Messages regarding entities not marked as annotation
suppressed.
NITPICK 2068: Entity (D   595) is not physically subordinate to drawing
entity at D   439.
NITPICK 2068: Messages regarding entities not subordinate to drawing
suppressed.

*** Entity type: 406

Independent property at D   445 applies to level 0.

*** Message Summary ***

2011: 952 Invalid subordinate relationships.
2015: 2 Mathematically incorrect definitions.
2016: 1237 Invalid entity use flag.
2043: 16 Invalid Subordinate status flags.
4011: 1 Problems in the Global section

*** Error Summary ***

    0 fatal errors
    1 severe errors
   17 errors
    0 warnings
    3 cautions
 2189 nitpicks
    1 notes

*** End of Analysis of /home/aftb4/gelwood/ti002.igs ***

9.2.2 Parser Log - AutoCAD R12

Title: IGESIN Journal (v5.1 Nov 05 1992)
==

File: C:/TMP/TI002.xli
Date: Wed, Jul 28, 1993
Time: 10:30:27
==

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750
Translating from IGES file: C:/TMP/TI002.IGS
          to AutoCAD Drawing: C:\TMP\TI002.dwg

==

Options obtained from: default settings
Curves Approximated to Tolerance of   0.01
Surfaces Approximated to Tolerance of   0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin
3	PHANTOM	acad.lin
4	CENTER	acad.lin
5	DOT	acad.lin

===

Parse phase

*** Warning (IAFP__SHORT_LINE) ***
110,-40.640186309814D0,80.3
C:/TMP/TI002.IGS, line 46422: Line is not 80 columns long.
*** Warning (IAFP__MISSING_EOL_DELIM) ***
C:/TMP/TI002.IGS, line 46422: Could not locate end of line delimiter, assuming
card is 80 columns.

*** Warning (IAFP__MISSING_SCTN_LTR) ***
110,-40.640186309814D0,80.3
C:/TMP/TI002.IGS, line 46422: Section letter not found in column 73.
*** Warning (IAFP__NO_SCTN_LTR) ***
110,-40.640186309814D0,80.3
C:/TMP/TI002.IGS, line 46422: Could not locate section letter, assuming
current section.
*** Error (IAFP__BAD_DE_BACKPTR) ***
110,-40.640186309814D0,80.3
^
C:/TMP/TI002.IGS, line 46422: Error decoding DE backpointer.
*** Warning (IAFP__SHORT_LINE) ***

C:/TMP/TI002.IGS, line 46423: Line is not 80 columns long.
*** Warning (IAFP__MISSING_EOL_DELIM) ***
C:/TMP/TI002.IGS, line 46423: Could not locate end of line delimiter, assuming
card is 80 columns.

*** Warning (IAFP__MISSING_SCTN_LTR) ***

C:/TMP/TI002.IGS, line 46423: Section letter not found in column 73.
*** Warning (IAFP__NO_SCTN_LTR) ***

C:/TMP/TI002.IGS, line 46423: Could not locate section letter, assuming
current section.
*** Error (IAFP__BAD_DE_BACKPTR) ***

   <<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Warning (IAFP__PD_CNT_MISMATCH) ***
S   21G   4D 21038P 50092   T
1
                          ^
C:/TMP/TI002.IGS, line 71157: PD section line count in terminate section is
incorrect.
*** Warning (IEVM_ZERO_LENGTH_110) ***
(DE 981, TF 110:0) Entity has zero length.

*** Warning (IEVM_ZERO_LENGTH_ARC_100) ***
(DE 1371, TF 100:0) Entity has zero length. Start point: 5.6404900e+000,
6.5387584e-001. Terminate point: 5.6404900e+000, 6.5387583e-001.

Action taken: Arc assumed to be full, Terminate point set equal to the Start
point.

*** Warning (IEVM_BAD_SUBORD) ***
(DE 1501, TF 102:0) DE has an invalid subordinance field. Value found was 4.

Action taken: Subordinance field has been set to specified default: 0

*** Warning (IEVM_BAD_SUBORD) ***
(DE 1503, TF 110:0) DE has an invalid subordinance field. Value found was 6.

Action taken: Subordinance field has been set to specified default: 0

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Warning (IEVM_BAD_VECTOR_124) ***
(DE 1599, TF 124:0) Entity has a column which is not a unit vector.

Action taken: Unitized all vectors.

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Warning (IEVM_ZERO_LENGTH_ARC_100) ***
(DE 1749, TF 100:0) Entity has zero length. Start point: 6.8702107e-001,
1.4692999e+002. Terminate point: 6.8702107e-001, 1.4692999e+002.

Action taken: Arc assumed to be full, Terminate point set equal to the Start
point.

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Warning (IEVM_BAD_END_POINT_104) ***
(DE 5415, TF 104:1) Entity's End Point not on the conic. Value found was
1.2000000e-001, 6.0480529e-006.

Action taken: End point moved 6.0480529e-006 units, from 1.2000000e-001,
6.0480529e-006 to 1.2000000e-001, 0.0000000e+000.

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Warning (IEVM_BOTH_ZERO_RADII_100) ***
(DE 12751, TF 100:0) Entity's radii are effectively zero. Start point radius:
0.0000000e+000. Terminate point radius: 0.0000000e+000.

*** Warning (IEVM_ZERO_LENGTH_110) ***
(DE 12753, TF 110:0) Entity has zero length.

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

*** Warning (IEVM_ZERO_LENGTH_110) ***
(DE 12779, TF 110:0) Entity has zero length.

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

===

Start Section:

CONFORMANCE: This IGES file conforms to the MIL-D-28000A Class II
             subset (Engineering Drawings) dated December 19, 1990.

DOD-STD-100 and MIL-T-31000 part and drawing identification:

Revision letters:

Performing organization:

Date of the ASME Y14.26M file pre-processing:

Contract Number:

Intended drawing size letter:

Number of drawing sheets in the file:

Data organization method with contents of each level:

IGES/Works Version v1.4.0 Subset Generator

Global Section:

Parameter Delimiter: ,
Record Delimiter: ;
Sending Product ID: scr.iges42110341
File Name: iges.j3181as11034sh1
System ID: COMPUTERVISION CADDStation REV 6.2D GRAPHIC SYSTEM
Preprocessor Version: CADDS-IGES REVISION 7.0 (02-Jan-92)
Size of Integer: 32
Sgl. Precision Mag: 38
Sgl. Precision Sig: 6
Dbl. Precision Mag: 308

Dbl. Precision Sig: 15
Receiving Product ID: scr.iges42110341
Model Space Scale: 1.000000
Unit Flag: 1
Unit String: IN
# of Line Weights: 32767
Maximum Line Width: 32.767000
Creation Date: 07/21/93 09:31:08
Minimum Resolution: 0.000100
Maximum Coordinate: 161.000000
Author: <UNKNOWN>
Organization: <UNKNOWN>
IGES Version Number: 8
Drafting Standard: 0
Model Create/Modify Date: 12/31/69 18:00:03

Entity Summary:

Type	Form	Description	Count
100	0	Circular Arc	2331
102	0	Composite Curve	8
104	1	Ellipse	114
106	12	Piecewise Linear Curve	3
110	0	Line	5830
116	0	Point	214
124	0	Transformation Matrix	332
126	0	Rational B-Spline Curve (General)	1450
128	0	Rational B-Spline Surface (General)	4
212	0	General Note (Simple)	205
230	0	Section Area (Standard Fill)	4
304	2	Line Font Definition (Pattern)	2
314	0	Color Definition	17
402	7	Group (Unordered, w/o back ptrs)	1
404	0	Drawing (form 0)	1
406	15	Property (Name)	1
406	16	Property (Drawing Size)	1
406	17	Property (Drawing Units)	1

                                                    Total   10519

==

Translation phase

Drawing Entity (404 Form 0) at DE 439, with
   name = SHEET1,
   size = 22.000000, 17.000000,
   units = IN,
was processed in the AutoCAD drawing file: C:\TMP\TI002.dwg

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
100	0	Circular Arc	2331	2310	21
102	0	Composite Curve	12	12	0
104	1	Ellipse	114	114	0
106	12	Piecewise Linear Curve	3	3	0
110	0	Line	5819	5797	22
116	0	Point	214	214	0
126	0	Rational B-Spline Curve (General)	1450	1450	0
128	0	Rational B-Spline Surface (General)	4	4	0
212	0	General Note (Simple)	205	205	0
230	0	Section Area (Standard Fill)	4	4	0
304	2	Line Font Definition (Pattern)	2	2	0
314	0	Color Definition	16	16	0
402	7	Group (Unordered, w/o back ptrs)	1	1	0
404	0	Drawing (form 0)	1	1	0
406	15	Property (Name)	1	1	0
406	16	Property (Drawing Size)	1	1	0
406	17	Property (Drawing Units)	1	1	0
Totals			10179	10136	43

AutoCAD Entity Summary

Entity	Created	Errors
LINE	6040	0
POINT	214	0
CIRCLE	570	0
TEXT	210	0
ARC	1740	0
INSERT	4	0
POLYLINE	1500	0
BLOCK	4	0
Totals		
	10282	0

Error Summary:

The following message was issued 102 time(s)
Could not locate end of line delimiter, assuming card is 80 columns.

The following message was issued 103 time(s)

Line is not 80 columns long.
The following message was issued 103 time(s)
Section letter not found in column 73.
The following message was issued 103 time(s)
Could not locate section letter, assuming current section.
The following message was issued 1 time(s)
Number of PD lines found, does not match number expected.

The following message was issued 103 time(s)
Error decoding DE backpointer.
The following message was issued 1 time(s)
PD section line count in terminate section is incorrect.
The following message was issued 16 time(s)
DE has an invalid subordinance field. Value found was %d.

The following message was issued 505 time(s)
Entity has zero length. Start point: %.7e, %.7e. Terminate point: %.7e, %.7e.

The following message was issued 21 time(s)
Entity's radii are effectively zero. Start point radius: %.7e. Terminate
point radius: %.7e.

The following message was issued 4 time(s)
Entity's End Point not on the conic. Value found was %.7e, %.7e.

The following message was issued 21 time(s)
Entity has zero length.

The following message was issued 307 time(s)
Entity has a column which is not a unit vector.

Status: 0
Warning: 1287
Error: 103
Fatal: 0

Elapsed Time:

Processor: 00:13:55
Clock: 00:13:56
==

9.2.3 Output AutoCAD R12

9.2.4 Output CheckMark

9.2.5 Output IGESView

9.2.6 Output IGESWorks